APPENDIX F: TRANSPORTATION

EXISTING CONDITIONS

ROADWAYS

Roads represent the largest component of the County's transportation network. Largely because of a topography typified by a large number of peninsulas and inlets in the lower County and pronounced ridgelines which fall off into steep ravines in the upper County, combined with a generally linear alignment along the banks of the York River, the roadway network has developed with a large number of collector roads feeding relatively few arterial roads. **Table 23** describes the general relationship between roadway classification and the state road system designation, although there is not always a perfect correlation. It is often also possible to think of such roads in terms of their traffic volumes, with the most traffic generally found on freeways and the least on subdivision or access streets. As traffic volumes increase, the level and degree of roadway design must also increase. Frequently, this means building roads with more and wider lanes, better shoulders, access controls, and increased speed limits. These features can increase both the safety and capacity of the roadway, but they also increase the cost of the road and can create significant barriers to non-automotive modes of travel.

Functional Classification	State Road System	Route Numbers
Freeway	Interstate Highways	
Arterial	Primary System	less than 600
Collector	Older Secondary System	600's and 700's
Subdivision Street	Newer Secondary System	800 or greater

Table 23

It is often also possible to think of such roads in terms of their traffic volumes, with the most traffic generally found on freeways and the least on subdivision or access streets. As traffic volumes increase, the level and degree of roadway design must also increase. Frequently, this means building roads with more and wider lanes, better shoulders, access controls, and increased speed limits. All of these things can increase both the safety and capacity of the roadway. They also increase the cost of the road and create significant barriers to modes other than automobile travel.

As in all Virginia counties except Arlington and Henrico, most of the roads[4] in York County are maintained not by the County but by the Virginia Department of Transportation (VDOT), which is responsible for almost 300 miles of roadway in the County. Most of these are secondary roads (225 miles), but there are also 48.4 and 11.3 miles of primary and interstate highways

For a variety of reasons, the automobile is the travel mode of choice for most Americans, and York County residents are no exception. In fact, York County is more dependent on the single-occupant vehicle (SOV) than most neighboring localities, and this dependence is growing. In 1980, for example, 66% of the County's commuters drove to work alone, while 25% rode in carpools. By 1990, the percentage of workers driving alone to work had risen to 83%, while the proportion of carpoolers had fallen to 13%. In addition, whereas 1.9% of commuters in 1980 used some form of public transportation, only seven-tenths of one percent did so in 1990. Finally, the percentage of people who walked to work declined from 6% in 1980 to 2.5% in 1990.

The growing prevalence of the single-occupant vehicle, combined with high residential and commercial growth within both the County and the region, has led to increased traffic congestion, which is a function of roadway capacity and traffic volumes. Average traffic volumes on most roads in the County have risen over the past decade with the greatest growth occurring on the Interstate system. From 1985 to 1994, the relative density of traffic on interstate and primary roads increased over 50%, from approximately 16,100 in 1985 to over 25,000 daily vehicles per mile of road. York ranks seventh among the state's 95 counties in relative traffic density.

[4] Excluding private streets and Federal roads, such as the Colonial Parkway and roads located within military bases.

An accepted measure of traffic congestion is the Volume/Capacity Ratio, which is the ratio of traffic volume to roadway capacity. When volumes exceed capacity, there are unacceptable travel delays along the roadway and often side streets as well. These delays increase air pollution, waste energy, and cause driver frustration which often manifests itself in attempts to find short cuts, usually along roads not designed for through traffic. The higher the volume/capacity ratio, the greater the need for road improvements.

YORK COUNTY COMMUTERS BY MODE OF TRAVEL: 1980 AND 1990				
MODE OF TRAVEL TO WORK	1980		1990	
	Number	Percent	Number	Percent
Drive alone	10,986	65.5%	17,488	83.4%
Carpool	3,969	24.7%	2,640	12.6%
Bus	287	1.7%	118	0.6%

PENINSULA COMMUTERS BY MODE OF TRAVEL: 1990						
MODE OF TRAVEL TO WORK	Hampton	James City County	Newport News	Poquo-son	Williams-burg	York County
Drive alone	79.3%	80.2%	74.9%	84.1%	55.9%	83.4%
Carpool	14.3%	16.0%	15.3%	12.7%	9.7%	12.6%
Bus	2.3%	0.8%	2.8%	0.3%	1.0%	0.6%
Other public transportation (including taxicab)	0.2%	0.2%	.2%	0.1%	0.9%	0.1%
Walk	2.8%	1.7%	4.9%	1.0%	27.6%	2.5%
Other means	1.3%	1.1%	1.9%	1.8%	4.9%	0.8%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Source: U.S. Census Bureau						

Table 25

Although traffic congestion has increased significantly, traffic accidents have not. More important than the number of accidents is the accident *rate*, which includes not just accidents but also traffic volumes. This is important because a high number of accidents along a given roadway may be merely a reflection of the high traffic volumes rather than a safety deficiency. The measure used by both the Virginia Department of Transportation (VDOT) and the Virginia Department of Motor Vehicles (DMV) is the accident rate per 100 million vehicle miles of travel.

For most roadways in the County the accident rate (accidents per 100 million vehicle miles of travel) has fallen during the past decade because traffic volumes are increasing faster than the number of traffic accidents. Over the past decade, accident rates have fallen on the Primary and Secondary Systems in the County but have risen slightly on the Interstate System.

Accident trends are closely monitored by the York County Transportation Safety Commission, which is an advisory body to the Board of Supervisors composed of County citizens and staff – including County Administration, the Sheriff's Office, the Department of Fire and Life Safety, and the School Division – who have an interest in transportation safety. Also represented on the Commission are various other agencies, including VDOT, the Coast Guard, the National Park Service, the Virginia Department of Motor Vehicles, and the Virginia State Police. One activity of the Commission, which developed the County's Transportation Safety Plan in 1992, is to analyze accident trends to identify hazardous locations which can then be emphasized – either through education, enforcement, or engineering, or some combination thereof.

Roadway *capacity* is derived from a mathematical relationship between roadway geometrics (lane width, horizontal and vertical curvature, shoulder type and width, etc.) surface treatment, access type and spacing, intersection location and type of control (stop sign, yield sign, traffic signal, etc.), and the general characteristics of travel (peak hours, number of heavy vehicles in the traffic stream, the number and percentage of left turns at intersections, etc.). All else being equal, the capacity of a roadway is defined by its conflict points which include access driveways and intersections--the fewer the conflict points, the greater the capacity of the roadway.

Taken together, safety deficiencies and capacity deficiencies are strong indicators of a need for road improvements. Improvements can be classified in four basic types:

- New Facilities,
- Spot Improvements,
- New Through Lanes, and
- Transportation System Management (TSM) Measures.

New facilities remove traffic from existing roadways; new lanes add capacity and enhance safety; spot improvements include turn lanes, improved roadway geometrics, signals, pavement dividers or markings, and other physical improvements short of adding through lanes; while TSM measures usually focus on peak hour demand reductions by encouraging alternative travel modes or off-peak travel times.

So that capacity and safety improvements can be considered together, a mathematical model has been developed to provide guidance for assigning relative priorities to various road improvements. A summarized version of this model is shown in table. This model does not consider intangible items such as community sentiment, site-specific access needs, political preferences, and other special circumstances that cannot be quantified. The methodology establishes three levels of relative priority based on how the needs compare with each other. The intent of the model is not to prioritize specific road improvements but rather to provide additional detailed information about the roadway segments modeled to provide information to decision-makers to assist in establishing roadway improvement and funding priorities. This information appears in **Tables 26** and **27**.

INTERSTATE AND PRIMARY ROAD PLANNING DATA

ROUTE #	ROUTE NAME	1995 V/C RATIO	2015 V/C RATIO	1990 ACCIDENT RATE	WEIGHTED SCORE	RELATIVE PRIORITY
17	GEORGE WASHINGTON MEMORIAL HIGHWAY					
	Newport News to Victory Blvd	143%	233%	93	14	B
	Victory Blvd to Hampton Highway	116%	256%	93	14	B
	Hampton Highway to Route 614	104%	153%	197	15	A
	Route 714 to Lakeside Drive	155%	276%	197	18	A
	Lakeside Drive to Dare Road	159%	245%	197	18	A
	Dare Road to Wolf Trap Road	98%	161%	197	13	B
	Wolf Trap Road to Denbigh Blvd	119%	146%	197	14	B
	Denbigh Blvd to Ft. Eustis Blvd	128%	213%	181	17	A
	Ft. Eustis Blvd. to Cook Road	159%	383%	181	19	A
	Cook Road to Goosley Road	100%	210%	138	13	B
	Goosley Road to Main Street	49%	98%	138	8	B
	Main Street to Gloucester	217%	428%	373	22	A
60	BYPASS ROAD					
	Williamsburg to Waller Mill Rd.	65%	166%	233	14	B
	Waller Mill Road to Rt. 132	95%	117%	233	13	B
	Rt. 132 to Williamsburg	80%	118%	233	13	B
60	POCAHONTAS TRAIL					
	JCC @ Rt. 199 to .71mw JCC	44%	108%	205	11	B
	.71mw JCC to JCC	95%	298%	205	15	A
64	I-64					
	JCC to Newman Road	65%	156%	49	10	B
	Newman Road to Merrimac Trail	65%	158%	55	11	B
64	Merrimac Trail to Queens Creek	104%	161%	66	13	B
	Queens Creek to Rt. 199	104%	161%	66	13	B
	Rt. 199 to Grove Cross	86%	158%	60	11	B
	Grove Cross to James City County	86%	188%	12	10	B
105	FORT EUSTIS BOULEVARD					
	Newport News to Rte 17	135%	198%	60	12	B
132	UNNAMED					
	Williamsburg to Bypass Road	82%	121%	31	9	B
	Bypass Road Merrimac Trail	95%	117%	31	9	B
134	HAMPTON HIGHWAY					
	Rte 17 to Victory Boulevard	93%	160%	243	15	A
	Victory Boulevard to Tide Mill Road	143%	256%	243	18	A

INTERSTATE AND PRIMARY ROAD PLANNING DATA						
ROUTE #	ROUTE NAME	1995 V/C RATIO	2015 V/C RATIO	1990 ACCIDENT RATE	WEIGHTED SCORE	RELATIVE PRIORITY
	Tide Mill Road to Hampton	138%	203%	243	18	A
143	MERRIMAC TRAIL					
	James City County to I-64 Interchange	30%	68%	197	9	B
	I-64 Interchange to Tam-O-Shanter Blvd.	25%	56%	197	9	B
	Tam-O-Shanter Blvd. to Route 199	30%	48%	197	8	B
	Route 199 to James City County	32%	46%	305	9	B
	James City County to Second Street	102%	148%	341	15	A
	Second Street to Williamsburg	129%	180%	489	16	A
	Williamsburg to Route 132	14%	18%	578	10	B
	Route 132 to I-64	32%	39%	675	13	B
171	VICTORY BOULEVARD					
	Newport News to RTE 17	25%	63%		6	C
	RTE 17 to Hampton Highway	120%	275%	448	18	A
	Hampton Highway to Big Bethel Road	143%	256%	263	17	A
	Big Bethel Road to Carys Chapel Road	123%	260%	263	17	A
	Carys Chapel Road to Poquoson	62%	109%	263	13	B
173	DENBIGH BOULEVARD					
	Newport News to Denbigh/Snidow Conn.	86%	182%	173	12	B
	Denbigh/Snidow Conn. to RTE 17	126%	189%	173	14	B
173	GOODWIN NECK ROAD					
	RTE 17 to Wolftrap Road	107%	141%	111	12	B
	Wolftrap Road to Seaford Road	51%	99%	111	9	B
	Seaford Road to Back Creek Road	46%	75%	111	7	C
199	UNNAMED					
	James City County to Merrimac Trail	43%	61%	59	6	C
	Merrimac Trail to 1-64	33%	61%	59	6	C
	I-64 to Penniman Road	14%	24%	419	9	B
238	OLD WILLIAMSBURG ROAD					
	Newport News to Baptist Road	97%	110%	257	13	B
	Baptist Road to Water Street	97%	110%	257	9	B
238	GOOSLEY ROAD					
	Water Street to Crawford Road	64%	88%	257	8	B
	Crawford Road to RTE 17	100%	210%	257	11	B
	Rte 17 to Cook Road	84%	228%	257	11	B
238	COOK ROAD					
	Goosley Road to Moore House Road	57%	107%	257	9	B
238	MOORE HOUSE ROAD					
	Ballard Street to Coast Guard Gate	51%	91%	207	11	B
Sources: Virginia Department of Transportation, Hampton Roads Planning District Commission, and York County Planning Division						

Table 26

SECONDARY ROAD PLANNING DATA						
ROUTE #	ROUTE NAME	1995 V/C RATIO	2015 V/C RATIO	1990 ACCIDENT RATE	WEIGHTED SCORE	RELATIVE PRIORITY
600	BIG BETHEL ROAD					
	Hampton to Hampton Highway	138%	203%	455	20	A
	Hampton Highway to Victory Boulevard	92%	203%	455	18	A
	Victory Boulevard to Yorktown Road	92%	203%	455	18	A
603	MOORETOWN ROAD					
	.73 Mile South Airport Rd. to Airport Rd	2%	99%	230	10	B
	Airport Rd. to relocated Mooretown Rd.	12%	83%	230	10	B
604	BARLOW ROAD					
	Newman Road to Frontage Rd. 137	31%	87%	215	9	B
620	ORIANA ROAD					
	Newport News to RTE 17	142%	266%	180	15	A

SECONDARY ROAD PLANNING DATA						
ROUTE #	ROUTE NAME	1995 V/C RATIO	2015 V/C RATIO	1990 ACCIDENT RATE	WEIGHTED SCORE	RELATIVE PRIORITY
614	SHOWALTER ROAD					
	Rte 17 to Lakeside Drive	39%	151%	176	9	B
620	LAKESIDE DRIVE					
	Rte 17 to Showalter Road	159%	245%	235	17	A
	Showalter Road to Dare Road	83%	123%	235	11	B
621	DARE ROAD					
	Rte 17 to Railway Road	87%	123%	315	13	B
622	SEAFORD ROAD					
	Goodwin Neck Road to Back Creek Road	57%	89%	194	11	B
630	WOLF TRAP ROAD					
	Rte 17 to Denbigh Boulevard	99%	126%	90	9	B
634	OLD YORK HAMTPON HIGHWAY					
	Rte 17 to Battle Road	31%	48%	155	7	C
	Battle Road to Wormley Creek Drive	31%	48%	155	7	C
	Wormley Creek Dr. to Cook Road	10%	34%	155	7	C
641	PENNIMAN ROAD					
	Williamsburg to Fillmore Drive	30%	45%	106	8	B
	Fillmore Drive to Route 199	7%	53%	106	9	B
	Route 199 to Colonial Parkway	37%	41%	106	8	B
645	AIRPORT ROAD	95%	108%	332	15	A
646	LIGHTFOOT ROAD					
	Richmond Road to I-64	72%	84%	265	12	B
646	NEWMAN ROAD					
	I-64 to James City County	61%	59%	265	12	B
655	ALLENS MILL ROAD					
	Amory Lane to Dare Road	36%	63%	393	10	B
658	YORKVILLE ROAD					
	Lakeside Drive to Oyster Cove Road	38%	57%	174	7	C
660	BAPTIST ROAD					
	Old Williamsburg Road to Spring Road	29%	71%	233	9	B
704	COOK ROAD					
	Rte 17 to Old York Hampton Highway	100%	192%	347	15	A
	Old York Hampton Highway to Cook Rd	68%	96%	347	13	B
706	YORKTOWN ROAD					
	Hampton Highway to Big Bethel Road	58%	87%	122	9	B
713	WALLER MILL ROAD					
	Bypass Road to Caran Road	65%	166%	192	11	B
716	HUBBARD LANE					
	Penniman Road to Holcomb Drive	32%	47%	96	6	C
718	HORNSBYVILLE ROAD					
	Old York-Hpt Hwy to Goodwin Neck Rd	42%	55%	388	12	B
782	EAST YORKTOWN ROAD					
	Poquoson to Victory Boulevard	42%	65%	204	8	B
782	CARYS CHAPEL ROAD					
	Victory Boulevard to Poquoson	28%	45%	204	7	C

Sources: Virginia Department of Transportation, Hampton Roads Planning District Commission, and York County Planning Division

Table 27

According to this model, primary roads in the County particularly in need of attention include Route 17, Route 134 (Hampton Highway), Route 171 (Victory Boulevard), and 173 (Denbigh Boulevard). In the secondary system, Oriana Road, Big Bethel Road, and Lakeside Drive stand out as roadways with a relatively high need for improvement.

For interstate and primary road system improvements, the County is largely beholden to VDOT and the Commonwealth Transportation Board, which each year adopts the State Six-Year Improvement Program, which establishes funding priorities for interstate, primary, and urban highway system improvements, as well as public transit, ports, and airports. It also includes secondary road projects for which Federal funding is being utilized. Each year the Board of Supervisors adopts a recommended program of interstate and primary

road improvement projects and priorities and makes a request of the Commonwealth Transportation Board that these projects be given consideration for inclusion in the State six-year plan. In this process, the County is competing with every other locality in the State

The County has much more control over secondary road system improvements than it does over the interstate and primary systems. Each year, the state distributes secondary road funds among the counties under VDOT jurisdiction. VDOT serves as the fiscal agent, so no actual money changes hands, and these funds can be spent *only* on secondary road system improvements. The County works with the local VDOT representatives to prioritize secondary road projects over the next six-year period and to allocate the funds accordingly. The Board of Supervisors formally establishes those priorities through the adoption each year of the Six-Year Secondary Road Improvement Plan.

The 2015 Roadway Map depicts all County road projects that are in the 2018 Long-Range Plan for Hampton Roads (other than the Mooretown Road projects, which have been completed) as adopted by the region's Metropolitan Planning Organization (MPO). This plan was developed using a computerized travel demand model that allowed many different roadway scenarios to be tested and evaluated relative to one another. Unlike previous plans, this is a fiscally constrained plan. Also depicted on the map are short- and medium-term projects that have been programmed into VDOT's six-year improvement plans. Projects in York County, some of which are currently under construction or have already been completed, are listed below:

- Widen Route 17 to six lanes between the Coleman Bridge and Route 171
- Widen Interstate 64 to six lanes.
- Widen Fort Eustis Boulevard to four lanes between Route 17 and the Newport News city line
- Extend Fort Eustis Boulevard westward from Route 17 to the intersection of Goodwin Neck Road (Route 173) and Seaford Road (Route 622)
- Construct turn lanes at Route 134 and Big Bethel Road
- Widen Victory Boulevard (Route 171) to six lanes between Route 17 and Big Bethel Road and to four lanes between Big Bethel Road and the Poquoson city line
- Construct a full cloverleaf interchange at Route 199 and International Parkway.
- Widen and extend Mooretown Road (Route 603).

Also depicted on the map are short- and medium-term projects that have been programmed into VDOT's six-year improvement plans. These are listed in **Table 28** below.

PROGRAMMED SECONDARY ROAD IMPROVEMENT PROJECTS		
ROUTE #	ROUTE NAME	IMPROVEMENT
600	Big Bethel Road	Intersection improvements at Routes 171 and 134
620	Lakeside Drive	Intersection improvements between School Lane and Dare Road
621	Dare Road	Left turn lane at Constitution Drive
621	Grafton Drive	Reconstruct between its two intersections with Route 17, including bike lanes and a sidewalk
641	Penniman Road	Reconstruct between Route 199 and Old York Road and between Alexander Lee Parkway and Government Road
782	Cary's Chapel Road	Intersection improvements at Route 171

Table 28

With the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and its reauthorization in 1998 under the name TEA-21 (Transportation Equity Act for the 21st Century), Congress recognized the need to look beyond road construction in developing solutions to our nation's transportation problems. Alternative modes of transportation – including transit, rail, bicycles, and walking – were given renewed attention in transportation planning.

MASS TRANSIT

As discussed earlier, only a small proportion of County residents uses mass transit. This is partly because there is very little mass transit available in the County. James City County Transit (JCCT), is the only mass transit operator serving York County residents, providing service to the Penniman Road/James-York Plaza area. In an effort to provide public transportation for County residents who need it, the County entered into a

partnership with Pentran and the Virginia Department of Rail and Public Transportation to institute fixed route peak-hour bus service in June 1994. The service, which was paid for mostly with Federal ISTEA funds and operated as a three-year pilot project, never attracted significant ridership. After three years, the Board of Supervisors discontinued the service in 1997, deciding that the subsidy per passenger was too great to warrant its continuation.

Another bus service that has proven more successful is the R&R ("Relax & Ride") Visitor Shuttle that serves the Williamsburg area, including Water Country USA, Bypass Road, and the Ramada Inn on Merrimac Trail in the upper County. This seasonal service began in 1997 as a three-year pilot program funded mostly with Federal ISTEA money through a regional allocation supplemented with funds from Williamsburg, James City County, and York County. In its opening season, the R&R shuttle surpassed expectations, attracting a total ridership of 58,172 (570 riders per day). Several changes to the service were made for the 1998 season, including the addition of Water Country USA and improved service to Bypass Road. Ridership more than doubled, totaling 121,061 (1,111 riders per day).

Another form of transit is carpooling and ride sharing. To encourage this activity, many communities have constructed commuter parking lots. There are two such lots in York County – along East Rochambeau Drive near Route 199 and under the Coleman Bridge – both of which are owned by VDOT. In addition, the region funds a computerized ride-matching program known as Traffix. Experience nationally has shown that ride-sharing programs are most successful when employers provide incentives for their employees to participate, and Traffix is working to develop such programs. High occupancy vehicle (HOV) lanes that are limited in the morning and afternoon peak hours to vehicles occupied by two or more people offer another means of encouraging ride sharing. As congestion worsens in the general purpose lanes, there is more of an incentive for people to carpool. HOV lanes are planned for construction along I-64 between the Route 199 (south) interchange and I-664 in Hampton.

RAILWAYS

York County is located to the northeast of the CSX main-line between Richmond and the coal port facilities of Newport News. This track generally runs along the spine of the Peninsula and provides both passenger and freight service.

Amtrak provides daily service between Newport News and Boston, with scheduled stops at Newport News and Williamsburg and flag service at Lee Hall, citizens throughout the County have access to the Amtrak transportation network in relatively close proximity to their homes.

The movement of freight along the CSX line is important to both the economy and the transportation network. The primary activity along this main-line route is the hauling of coal to the coal terminals in Newport News. Six to eight coal trains a day traverse the CSX line. Virginia Power and Amoco are the major private rail freight users, but C. A. Barrs Contracting, Custom Concrete, and Reynolds Recycling all use rail service. The Yorktown Naval Weapons Station also utilizes rail freight.

The existing CSX main-line and the Amoco spur provide an opportunity to locate rail-served industry in the Goodwin Neck/Seaford area, which is designated for industrial use. In addition, Busch Industrial Park could be opened to potential rail service if a joint use arrangement can be reached with the U.S. Navy regarding the Cheatham Annex spur. This facility has not been regularly used for a number of years and would likely need to be repaired and upgraded to serve the heavy freight needs of warehousing and industrial users. However, the availability of rail service could provide market niche opportunities that are currently unavailable, particularly if passenger service is expanded.

Expanded rail service does provide potential problems as well as opportunities, however. The three major problem areas are noise, impact on the other transportation modes, and competition between freight traffic and passenger rail traffic for the same main-line track. In all three cases, effective scheduling is the primary answer, together with close monitoring of the at-grade rail/road crossings in the County to ensure both safety and reduction of delays to automobile traffic.

A Major Investment Study (MIS) of the CSX Railway Corridor was completed in 1997. The purpose of the MIS was to study the likely impacts of alternative transportation investment strategies in the

transportation corridor, which extends approximately 34 miles from Williamsburg to Hampton. Alternatives studied include transportation system management, enhanced bus service, HOV/bus lanes, light rail transit, and advanced light rail transit. Local jurisdictions including York County were involved in reviewing the study's findings and recommendations and in selecting the locally preferred alternative, which is to enhance bus service in the short term while planning for light rail service in the long term. The CSX Corridor preferred alternative will be integrated with two other transportation studies – the I-64 MIS and the Hampton Roads Crossing Study – that have recently been completed.

The I-64 MIS, which began in 1996 and was completed in 1998, analyzed the entire transportation corridor between Richmond and Hampton and Newport News, including both the I-64 corridor and the CSX corridor. In addressing rail needs, the I-64 MIS calls for double-tracking the CSX corridor between Richmond and Newport News to provide for some separation of passenger rails and freight service. This will allow passenger rail speeds up to 110 mph and eight trains per direction per day. With these improvements, rail ridership along the CSX corridor is projected to increase from its current level of approximately 520 daily person trips (34,320 person miles traveled) to approximately 3,000 daily person trips (178,000 person miles traveled) by 2015. These improvements are also consistent with the long-term objective for establishing high-speed rail service between Richmond and Washington, D.C.

The Hampton Roads Crossing Study evaluated numerous alternative conceptual designs and corridors for a future third crossing of Hampton Roads. This study, which also included the CSX corridor, identified a preferred corridor for that could possibly include a transit component.

BIKEWAYS

Bicycles can be an important component of the County's transportation system. The benefits of bicycle use include energy conservation, reduced noise and air pollution, traffic reduction, and health and fitness improvement. Increasingly, bicycle use has become a viable means of transportation as well as a recreational activity. York County, because of its mild weather, relatively flat terrain, and tourist attractions offers ideal opportunities for bicycling.

In 1991, the Colonial Parkway and Route 132 were the two recognized bikeways in the County. In addition, Bypass Road contains a multi-use trail along its southern side. Since then, York County joined with Williamsburg and James City County in developing a Regional Bikeway Plan, which was adopted by the three localities in 1993. In developing the Bikeway Plan, the advice of both the general public and bicycle enthusiasts was sought, and it was also recognized that a regional approach was appropriate since bikeways, like roads, should not abruptly end at jurisdictional boundary lines. In accordance with this plan, 9.5 miles of shoulder bike lanes have since been built along Old York-Hampton Highway and Amory Lane, and another 13 miles are scheduled for construction – along Mooretown Road/International Parkway, Grafton Drive, and Goodwin Neck Road – by the end of 1999.
There are three basic types of bikeways recognized by both the U.S. and Virginia Departments of Transportation that have been used in developing bicycle plans in the region:

- **Multi-Use Trails** are constructed physically separate from roadways. They may be developed either in a separate right-of-way apart from roads and streets or as a path within the road right-of-way but physically separated from motor vehicle traffic. Such facilities should be considered along roadways with high traffic volumes and speeds, across bridges and causeways or through scenic areas where motorized traffic would be inappropriate. While providing an environment relatively protected from conflicts with vehicles, multi-use trails occasionally suffer from lack of maintenance, and the other users (joggers, rollerbladers, walkers, etc.) can interfere with bicycle use. Furthermore, the remoteness of some of these facilities can present personal safety concerns. These potential disadvantages should be carefully considered when making decisions with respect to siting such facilities. Multi-use trails are also the most costly type of bikeway to construct.

- **Shoulder Bike Lanes** are constructed adjacent to traffic lanes and are generally delineated by pavement markings. Such bikeways provide a moderate degree of safety as the road accommodates travel lanes for both motor vehicles and bicycles. They are much less costly than separate paths and often can be constructed in conjunction with highway widening projects. Paved shoulders four to five feet in width

are generally sufficient for this purpose and have significant safety benefits for motor vehicles as well as cyclists. Shoulder lanes should be used especially along roads having moderate traffic volumes and speeds and where there are unusual roadway geometrics that impair safety.

- **Shared Roadways** are those where the travel lanes are shared by all users of the roadway. Occasionally, the travel lanes are widened to 14 or 15 feet rather than the standard 12 feet, but signs are often the only accommodation. These facilities are appropriate on roads with very low traffic volumes, adequate sight distances, and residential speeds. Moreover, shared roadways can be used as an initial step in providing bike facilities. Shared roadways need more active and frequent maintenance, particularly of the roadway edges, and should be considered for plant mix (asphalt) surfacing rather than tar and chip.

In 1994, the Historic Triangle Bicycle Advisory Committee (HTBAC) comprised of representatives of Williamsburg, James City County, and York County was formed. Part of HTBAC's mission is to coordinate updates to the regional bicycle transportation plan first adopted in 1993. Such an update was undertaken in 1996-97. Unlike the original plan, the update incorporates not only transportation-oriented facilities but recreational ones as well. Several series of public input sessions were held during the development of this plan. These were sponsored by HTBAC, the James City County Parks and Recreation Commission, the York County Parks and Recreation Advisory Board, and the Williamsburg Department of Parks and Recreation. The resulting Regional Bikeway Plan reflects five years of public input from more than 400 citizens and enthusiasts in the region. In York County, the Regional Bikeway Plan provides the bikeway system listed in **Table 29**.

Type	Miles	Percent of Total
Multi-Use Trails	22.4	19.5%
Shoulder Lanes	57.4	50.0%
Shared Roadways	35.0	30.5%
TOTAL	114.8	100.0%

Table 29

WALKWAYS

Walking is the most basic and yet probably the most overlooked mode of transportation in our society. Encouraged by an increasingly dispersed land use pattern, Americans are more dependent than ever before on their automobiles, even for short trips. According to the Nationwide Personal Transportation Survey (NPTS) conducted in 1990, an estimated 7.2% of all trips are made by foot, down from8.5 % in the 1983 NPTS.

In a number of obvious cases, York County can be defined as the place where the sidewalk ends. Richmond Road, Second Street, and Merrimac Trail provide the most startling examples that sidewalk construction has not been a priority in York County as sidewalks end at the Williamsburg-York County line. There are some streets in the County, however, that do have sidewalks or pedestrian/bicycle trails. These include Bypass Road and a segment of Lightfoot Road in the upper County, Water Street and Ballard Street in Yorktown, and First Avenue, Coventry Boulevard, Owen Davis Boulevard, and Kiln Creek Parkway in Tabb. In addition, sidewalks are present along many of the County's subdivision streets since the Zoning and Subdivision Ordinances require walkways in most medium- and high-density residential developments.

In November 1995, on the recommendation of the Transportation Safety Commission, the Board of Supervisors adopted a sidewalk plan for York County. This plan, which envisions a sidewalk network that encompasses 33 miles of roadway, was based on two premises: that people should be able to walk safely to nearby schools, shops, parks, churches, libraries, and they should be encouraged to do so. Accordingly, the sidewalk plan focuses on areas where people live within a reasonable walking distance of such facilities.

The roadways along which sidewalks are proposed are divided into three broad categories based on the proposed funding mechanism:

- **Category A** includes roads where an improvement is planned and where sidewalks can be constructed in conjunction with the planned improvement.

- **Category B** includes largely undeveloped roads in commercial areas where sidewalks will be needed in the future as development occurs. The County can require sidewalks in these cases as a condition of development.

- **Category C** includes roadways where there is a demonstrated need for sidewalks but where neither roadway improvement nor significant new development is likely in the forseeable future. In these cases, it will be up to the County or affected landowners, if they so desire, to pay for sidewalks, possibly with assistance from Federal funding sources.

AIRPORTS

York County is served by three commercial airports. Newport News/Williamsburg International Airport, which straddles the County boundary with Newport News, is the closest but has by far the least air passenger traffic. Norfolk International and Richmond International have ten and seven times the passenger air travel respectively and are each approximately one hour from most parts of the County, depending on traffic and the time of day. None of these airports is a world-class facility.

Other airport facilities that are located in or affect York County include Langley Air Force Base in Hampton, airfields at Camp Peary and the Yorktown Naval Weapons Station, and the Williamsburg-Jamestown Airport in James City County, which serves some of the general aviation needs of the Williamsburg area.

The need for improvements to the airport will be dictated by demand. In 1997 the Peninsula Airport Commission, which represents the cities of Newport News and Hampton, adopted an Airport Master Plan that considers three possible growth scenarios. The low scenario projects that annual airport operations (takeoffs and landings) will grow from approximately 169,400 in 1995 to 222,800 by 2030.In this scenario the annual number of passenger enplanements (outbound) at the airport will almost triple from 162,000 in 1995 to 642,000 in 2030. In the medium growth scenario, operations are projected to reach 265,900 by 2030, with enplanements reaching 2.8 million. This is referred to as the "linear hub scenario" which assumes "a higher level of point-to-point air service to communities of interest with the airport capturing a higher share of its market-area airline passengers." The high growth scenario projects a dramatic increase in activity, with 482,200 annual operations and 8.4 million enplanements by 2030. This scenario "assumes that the volume of activity in the national airport system results in the creation of new connecting hub airports to off-load conventional flight-delay-prone connecting airports, as happened in the 1980's."

NEWPORT NEWS/WILLIAMSBURG INTERNATIONAL AIRPORT
PROJECTED ANNUAL OPERATIONS AND ENPLANEMENTS

Growth Scenario	1995		2000		2010		2030	
	Operations	Enplanements	Operations	Enplanements	Operations	Enplanements	Operations	Enplanements
Low	169,400	195,000	177,700	256,000	196,200	395,000	222,800	642,000
Medium	169,400	195,000	202,600	1,080,000	226,700	1,696,000	265,900	2,831,000
High	169,400	195,000	202,600	1,080,000	328,000	3,632,000	482,200	8,462,000

Source: Peninsula Airport Commission, Newport News/Williamsburg International Airport Master Plan Executive Summary

Table 30

The 1997 Airport Master Plan calls for the ultimate extension of both existing runways and construction of a third in order to accommodate the high-growth "connecting hub" scenario. While such a configuration would extend the runways closer to populated areas of York County, the noise aspects of this configuration may actually be reduced in future years as noise abatement technologies are developed and utilized, both at airports and on the planes themselves. In fact, the Master Plan predicts that the area affected by noise from the fully developed airport will be less than the current situation.

Both Norfolk International and Richmond International Airports have also recently adopted new master plans based on projected growth in activity. Norfolk International is projecting to triple its annual number of enplanements from 1.3 million in 1993 to 3.8 million in 2030, while annual operations are projected to almost double during this period (from 131,318 operations in 1993 to 258,200 operations in 2030).

Richmond International, where operations increased by 40% between 1985 and 1995, is also projecting continued growth through 2030, rising from almost 1.1 million enplanements in 1995 to 3.9 million in 2030.

Annual operations are projected to grow from approximately 150,000 in 1995 to slightly over 300,000 in 2030.

An "Eastern Virginia Airport System Study" is currently under way to analyze the air transportation needs of the greater eastern Virginia region, which encompasses the combined market area of the three airports. This study will address means to enhance capacity and efficiency and to stimulate economic development and perhaps lead to the eventual establishments of a major international airport. The goal of this study is to "have a plan to develop a balanced, highly competitive air transportation system that will place Eastern Virginia in a better position to attract new investments, create new jobs and compete in the global economy on a grander scale." This effort is being coordinated by the Virginia Department of Aviation, with participation from the three airports, the Virginia Departments of Environmental Quality, Rail and Public Transportation, and Transportation, the Federal Aviation Administration, and the Richmond Regional, Crater, and Hampton Roads Planning District Commissions. Also involved in this effort is a private sector coalition called Virginia Gateway 21, which works through these public agencies with the goal of examining the potential for a world class airport system in eastern Virginia.

WATERWAYS

The many waterways in and around York County are used by residents and businesses for a variety of purposes including seafood harvesting, recreation, and passive enjoyment, but only the York River serves as a transportation artery. The York River, with a 32-foot wide channel, is one of the deepest rivers in the world. It is 33 miles long and was formed 4,000 to 6,000 years ago. The river begins at the junction of the Pamunkey and Mattaponi Rivers at West Point, Virginia. The York River is an estuary fed by a mixture of freshwater from rainfall and drainage from the west and tidal action and saltwater from the Atlantic Ocean and Chesapeake Bay from the east.

Three primary types of cargo are transported by water along the York River – crude oil and refined petroleum products to and from Amoco; military supplies to and from the U.S. Navy installations along the river, primarily the Yorktown Weapons Station; and both raw materials and finished paper products to and from the Chesapeake Corporation in West Point. There has also been some barging of sand and gravel.

In addition to cargo transport along the river, Yorktown has served as a port-of-call for passenger cruise ship line and has had other cruise ship lines call in the past. The major impediment to this type of activity in recent years has been the lack of adequate docking facilities. The public wharf on the Yorktown waterfront has fallen into disrepair, causing it to be closed several years ago. The Yorktown Master Plan calls for demolition of the old wharf and "reconstruction of a new wharf/pier complex which extends far enough into the river to allow deeper draft vessels to dock and which is long enough (approximately 200 feet) to allow two large vessels – such as tall ships, dinner cruise boats, or commercial cruise lines – to dock simultaneously."[5] The plan also recommends that facilities be provided for temporary docking of small pleasure boats that would be attractive to boaters wishing to make day trips to Yorktown to visit restaurants, shops, and historical attractions. In addition, the plan notes that the end of the existing pier in Yorktown could also be adapted to allow a cruise ship to dock parallel with the currents, since "the present configuration places the vessel alongside the pier, which is perpendicular to the current and difficult to maneuver."[6]An investor group is in the final stages of developing a lunch and dinner cruise operation based at the Yorktown pier.

The scenic vistas and value of the York River contribute to the ambiance of Yorktown and the entire County. With a few exceptions – most notably the Virginia Power Yorktown Power Plant, the Naval Weapons Station piers, and the Coleman Bridge – river views are relatively unspoiled by large-scale or industrial waterfront types of uses. The Colonial Parkway serves as the main tourist route between Williamsburg and Yorktown and the maintenance of the scenic values along this roadway is critical to preserving its appeal.

[5] Yorktown Master Plan, adopted by the York County Board of Supervisors March 4, 1993 (prepared for the York County Board of Supervisors and the Yorktown Revitalization Steering Committee by Sasaki Associates, Inc.. Carlton Abbott and Partners, Inc., and Anderson Associates, Inc.), p. 89.
[6] Ibid., p. 46.

CHANGES SINCE 1991

Before 1991, transportation planning in Virginia was little more than compiling lists of desired roadway improvements without regard to cost or feasibility. The emphasis was on moving as many vehicles as possible as quickly as possible along a roadway. There traditionally had been no attempt to match costs with expected revenues. Consequently, transportation plans had no certainty attached to them and provided no guidance as to what improvements might actually be made within a period of time. Further, to the extent that different transportation modes were considered, they were done individually with little attempt to coordinate among them.

There have been numerous changes in roads and roadway planning since the adoption of the Comprehensive Plan in 1991. In 1991, Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA), which has changed the culture of transportation by placing more emphasis on planning and less on engineering. Also, regional and state transportation plans need to be "fiscally constrained" and conform with air quality standards. Finally, all modes must be considered in making transportation investment decisions. The goal is to allow transportation decisions to be more responsive to the needs and desires of local residents.
Road construction and improvement projects that have been completed or undertaken since 1991, include the following:

- Widening of the Coleman Bridge, removing a major bottleneck along Route 17 in Yorktown.
- Construction of Victory Boulevard (Route 171) between Route 17 and the Newport News City line, providing Tabb area residents with direct access to a full Interstate 64 interchange and opening up to development a significant amount of commercial, light industrial, and residential land
- Completion of Route 199 with a full cloverleaf interchange at Mooretown Road.
- Extension and widening of Mooretown Road.
- Widening of Old York-Hampton Highway, which consistently had one of the highest accident rates among secondary roads in the County.
- Widening of Amory Lane to improve access to Grafton High School/Middle School.

Consistent with the spirit and intent of ISTEA and TEA-21, York County has also made several strides toward establishing a more multi-modal transportation system. These include the adoption of a regional bikeway plan (with Williamsburg and James City County) and the implementation of the first phases of that plan, including bicycle lanes along East Rochambeau Drive. Bike lanes have also been installed along Old York-Hampton Highway and Amory Lane in conjunction with roadway improvement projects along those roads. The County also experimented with mass transit with a three-year bus service program that was funded mostly with Federal funds, and it continues to participate in the Williamsburg Area Visitor Shuttle with Williamsburg and James City County. In addition, the County adopted a sidewalk plan to improve pedestrian mobility and safety.